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TITLE

GOLF CLUBHEAD MARKINGS, METHODS AND TOOLS.



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ABSTRACT

Golf club head consisting of a balance plane, that subdivides the head, that derives markings visible on the club head face, containing multiple Sweet Spots indicating the ideal points of contact with a golf ball regardless of whether the golf ball is lying on the ground, on a golf tee or otherwise, together with markings visible on club head face and or top indicating alignment and methods of use, also used as a visual aid of club head and golf ball to the target, with and without parallax correction, with methods and tools for determining same, with related design improvements and methods of use on golf club head components having one Sweet Spot. The markings are determined by intersecting lines, planes and axes. The markings may be determined for an existing golf club or for a custom fitted golf club regardless of whether the golf club has a flat or curved base. The location of the markings may vary from golfer to golfer and from club to club depending upon parameters, or the markings may be located so as to be generic.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective and interior view of a golf club wood, with a Shaft Grip Centerline 42, showing swing plane 1, club head swing plane 29, center of mass axis 3, , and alignment lines including: Bernie line 2; Sweet line 4, with 4* indicating the length; Target line 5, with 5* indicating the length; Ground Vertical line 12; Tee Vertical line 13; Ground Target line 14; Tee Target line 15; Perimeter line 28; and Training line 31. Also shown is Maximum Sweet Spot 16, Control Mass 20, Orbital Mass 21, Flat base 23, Bernie Point 30, Flat face 50 and Center of Mass 66.

FIG. 2 is a perspective and interior view of a baseball bat with a swing plane and compositions. Shown are Optimum Sweet Spot 17, Swing Plane Arc 27 and Swing Plane Radius 36.

FIG. 3 is a side view of an iron clubhead to a ball on the ground, impact point relationship and Flat Base. Shown are Ground 6, Ball Ground Height 8, Ball Impact Point 9, Ground Sweet Spot 10, 10* being Ground Sweet Spot Height, Ball Diameter 37 and Ball Set Point 38.

FIG. 4 is a side view of an iron clubhead to ball on a tee, impact point relationship. Shown are Ball Tee height 7, and Tee Sweet Spot 11, with 11* showing Tee Sweet Spot Height.

FIG. 5 is a front view of an iron embodying the present invention. Shown are 10** indicates Ground Hit Line, 10*** indicates Ground Dead Line, 11** indicates Tee Hit Line, 11*** indicates Tee Dead Line, Hood 24, Hood Stop 25, True Sweet Spot 26, Hood Point 32, Sweet Line Height 33, Sweet Line Peak 34, Eyealigner 59, and Conventional Iron 67.

FIG. 6 is a perspective view of a conventional wood head. Shown are Sweet Spot 22, Sweet Spot Alignment Spot 35, Horizontal Face Bulge 64 and Face Bulge 65.

FIG. 7 is a perspective view of a novel wood clubhead. Shown are Lower Toe Weight 18, Upper Toe Weight 19, Sweet Line Horizontal Face Bulge 39, Sweet Line Face Vertical Roll 40, Heel Base 47, Centerset 48, Plow 49 and Toe Base 61.

FIG. 8 is a perspective and interior view of a partially embodied wood clubhead with planes and axes correlation to a Weight Distribution Face line parallel to a Flat Base. Shown are Second Base 43, Face Orientation Plane 51, Clubhead Face Orientation Plane 52, Weight Distribution Plane 53, Weight Distribution Axis 54, True Sweet Spot Axis 55, Ground Sweet Spot Axis 56, Tee Sweet Spot Axis 57 and Weight Distribution Face Line 58.

FIG. 9 is a perspective and interior view of a partially embodied wood clubhead with an EyeAligner, perpendicular planes and axes correlation. Shown is Maximum Ball Compression Area 60.

FIG. 10 shows a perspective view of the RighTee-HeighTee tool 78, indicating Adjustable Tee Height 45, Hinged Foldup 46, Ball Mark Repair Tool 62, Ball Marker 63, Groove Cleaner 69, Clubhead Face Cleaning Pad 70 and Tee Head Retainer 90.

FIG. 11, illustrates the Dynamic Clubhead Impacting To The Golf Ball Method. Shown are A Golf Club 71, Spherical Quadrant Shifter 72 and a Club Torque Responder 73.

FIG. 12, illustrates the Static Clubhead Loft Angle Plumb Bobbing Method. Shown is Plumb Bob 74.

FIG. 13, illustrates the Static Horizontal Clubhead Face Balancing Method. Shown are the Club Grip End 75, a Level Platform 76, the Clubhead Face 79 and the Sweet Line Locator Tool 77. Also shown are Donut Shaped Stabilizer Base Member 87 and Rigid Rod 88.

FIG. 14, illustrates one method for locating the conventional Sweet Spot 22 of a club head. The figure illustrates a club head without a shaft or grip or other components. The club head is shown with the club head face facing downward and balanced on a Sweet Line Locator 77. The club head will only balance at one point.

FIG. 15, illustrates a clubhead with Sweet Line 4 shown as a diagonal line, the Sweet Line 4 is raised to indicate both angular bulge 39' and angular roll 40'. Angular Grooves 80 are shown parallel to the Sweet Line 4 and therefore at a diagonal. Also shown is Round Base 81. In addition Sweet Line Peak 34, also known as Hump, is shown together with Eyealigner 59, also known as Target Line.

FIG. 16, illustrates a conventional iron 67 shown in dotted lines and an iron with a curved base 81. Shown on the iron with curved base 81 is a Sweet Line Peak 34. Also shown is Sweet Line 4 as it would appear on both the conventional iron 67 and the iron with curved base 81.

FIG. 17, illustrates an iron with the Center Grip Shaft 42 aligned to point of contact for a ball resting on the ground at Ground Sweet Spot 10, which is the Sweet Line Centerset 48'. The Sweet Line Centerset is having the shaft and grip center line align with a specific point on the Sweet Line when the clubhead face surface is viewed from the toe of the clubhead. In FIG. 17 the specific point is the Ground Sweet Spot.

FIG. 18 shows the Lie Angle Paper 82, Lie Angle Base Corner 83, Level Platform 76 and Hole In Level Platform 84.

FIG. 19 shows Lie Angle Paper 82, a Golf Club 71, Level Platform 76, Sweet Line Locator 77, Donut Shaped Stabilizer Base Member 87 and Golf Club Top Surface 85. Also shown in dotted lines is Shaft Grip Centerline 42. The Golf Club 71 is shown with the Shaft

Grip Centerline 42 at the angle of intended use.

FIG. 20 shows Lie Angle Paper 82, a Golf Club 71, Level Platform 76, Sweet Line Locator 77, Donut Shaped Stabilizer Base Member 87, Golf Club Top Surface 85, Ground Target Line 14 and Level 86. Also shown in dotted lines is Shaft Grip Centerline 42. The Golf Club 71 is shown with the Shaft Grip Centerline 42 at the angle of intended use, as adjusted for parallax.

FIG. 21 shows Golf Club 71, Level Surface 76, Instrument That Reads The Angle Of Slope Above The Horizontal 89, Ground Target Line 14 and Tee Target Line 15. Also shown in dotted lines is Shaft Grip Centerline 42. The Golf Club is shown at the angle of intended use.

FIG. 22 shows Golf Club 71, Level Surface 76, Instrument That Reads The Angle Of Slope Above The Horizontal 89, Level 86, Ground Target Line 14 and Tee Target Line 15. Also shown in dotted lines is Shaft Grip Centerline 42. The Golf Club is shown at the angle of intended use as increased for parallax.

FIG. 23 shows the Instrument That Reads The Angle Of Slope Above The Horizontal 89. As shown this is a standard instrument readily available on the market. The instrument will read 90 degrees when the long shaft is vertical and 0 degrees when the long shaft is horizontal.

FIG. 24 shows a side view of the Club Head Component 92, Sweet Spot Axis 95 is shown in dotted lines, the Sweet Spot 22 is shown on the Clubhead Face 79 which is downward facing, the Club Head Component 92 is shown balanced on the Rigid Rod 88.

FIG. 25 shows a top view of the Club Head Component 92, from FIG.25, the Club Head Component 92 having been rotated about the Sweet Spot Axis 95, also shown is Sweet Spot 22 still making contact with the Rigid Rod 88.

FIG. 26 shows a front view of the Club Head Component 92, also shown is Sweet Spot

22, Instrument to Measure Angle of Slope Above the Horizontal 89, Incorrect Target Line Front Point 97, Center Grip Shaft 42, Level Platform 76 and Shaft 93. The Instrument to Measure Angle of Slope Above the Horizontal 89 is shown with the long portion aligned parallel with the Center Grip Shaft 42, the resulting angle will indicate the slope or angle of intended use. The
5 Instrument to Measure Angle of Slope Above the Horizontal 89 is shown in a second position aligned with the long portion in the vertical. The edge of the long portion is at the Sweet Spot 22 resulting in the Incorrect Target Line Front Point 97 being located as shown.

FIG. 27 shows the Club Head Component 92, positioned as in FIG. 26, balanced on the Rigid Rod 88 at the Sweet Spot 22. Also shown is Instrument to Measure Angle of Slope Above
10 the Horizontal 89 on Level Platform 76, aligned with the long portion in the vertical. The edge of the long portion is positioned at Incorrect Target Line Front Point 97, with the edge forming the Incorrect Sweet Spot Target Line 96.

FIG. 28 shows a top view of the Club Head Component 92, indicating how the Incorrect Sweet Spot Target Line 96 may be expanded in either or both directions with a resulting Sweet
15 Spot Target Line Range 98. Also shown is Target Line Length 5*.

FIG. 29 shows a front view of the Club Head Component 92, as set up at angle of intended use, also shown is Sweet Spot 22, Instrument to Measure Angle of Slope Above the Horizontal 89, Incorrect Target Line Front Point 97, Incorrect Sight Line 99, Center Grip Shaft 42, Level Platform 76 and Shaft 93. The Instrument to Measure Angle of Slope Above the
20 Horizontal 89 is aligned with the corner at the Sweet Spot 22 and the long portion at the Correct Sight Line 100, as a result the Parallax corrected Target Line Front Point 97* is located as shown. The Instrument to Measure Angle of Slope Above the Horizontal 89 can be aligned anywhere on the Sight Line 100 provided that the Sight Line 100 passes thru Sweet Spot 22.

FIG. 30 shows the Club Head Component 92, positioned as in FIG. 28, balanced on the Rigid Rod 88 at the Sweet Spot 22. Also shown is Instrument to Measure Angle of Slope Above the Horizontal 89 on Level Platform 76, aligned with the long portion in the vertical. The edge of the long portion is positioned at Parallax Corrected Target Line Front Point 97*, with the edge forming the Parallax Corrected Sweet Spot Target Line 96*. The Parallax Corrected Sweet Spot Target Line 96* may be expanded, as was Incorrect Sweet Spot Target Line 96 in FIG. 29, in either direction or both as indicated with the resulting Sweet Spot Target Line Range 98. Both Incorrect Sweet Spot Target Line 96 and Parallax Corrected Sweet Spot Target Line 96* are shown for comparison.

FIG. 31 shows the Golf Club Component 92 balanced on a balance support device 88, with the balance support device 88 positioned on the level platform 76, all as previously described. The sweet spot 22, on the club head face surface 79, has been determined as described previously. A vertical support means 109 is shown having a vertical support means pivot point 109* and a vertical support means slot 109**. Also shown is a Conventional Instrument To Measure Angle Of Slope Above The Horizontal 89, frictionally secured to the vertical support means 109. The Instrument is positioned in order that the long edge is parallel to the Level Platform 76. Draw a line on the Club Head Component 92 Top Surface 79** being the Face Line 101.

FIG. 32 illustrates Conventional Instrument To Measure Angle Of Slope Above The Horizontal 89 being at an angle with the long edge being closer to the Face Surface 79, at the hosel 79*. The Face Line that is drawn is The Face Line Closed 101*.

FIG. 33 illustrates Conventional Instrument To Measure Angle Of Slope Above The Horizontal 89 being at an angle with the long edge being further from the Face Surface 79, at the

hosel 79*. The Face Line that is drawn is The Face Line Open 101**

FIG. 34 illustrates the Club Head Component 92 with a Shaft 93 inserted at the Hosel 79*. Also shown is a Golf Ball 37*, with an arrow indicating the direction of intent. Also shown is the desired point of anticipated contact, at address, being at the Sweet Spot 22. Note that the Face Line 101, as marked in FIG. 31, provides a visual aide indicating that the line and Club Head Face Surface 79 are square to the direction of intent.

FIG. 35 illustrates the Club Head Component 92 with a Shaft 93 inserted at the Hosel 79*. Also shown is a Golf Ball 37*, with an arrow indicating the direction of intent. Also shown is the desired point of anticipated contact, at address, being at the Sweet Spot Face Closed 22*. Note that the Face Line Closed 101*, as marked in FIG. 32, provides a visual aide indicating that the line is square to the direction of intent, with the Club Head Component 92 in the Face Closed position to the Golf Ball 37*.

FIG. 36 illustrates the Club Head Component 92 with a Shaft 93 inserted at the Hosel 79*. Also shown is a Golf Ball 37*, with an arrow indicating the direction of intent. Also shown is the desired point of anticipated contact, at address, being at the Sweet Spot Face Open 22**. Note that the Face Line Open 101**, as marked in FIG. 33, provides a visual aide indicating that the line is square to the direction of intent, with the Club Head Component 92 in the Face Open position to the Golf Ball 37*.

FIG. 37 is a plan view of the top surface of the Golf Club Head Component 92 with Incorrect Sweet Spot Target Line 96 together with Face Line 101. Also shown is Incorrect Target Line Front Point 97. Also shown are Sweet Spot 22, Rigid Rod 88, Level Platform 76 and Sweet Spot Target Line Range 98.

FIG. 38 is a plan view of the top surface of the Golf Club Head Component 92 with

Incorrect Sweet Spot Target Line 96, with Parallax Corrected Sweet Spot Target Line 96* together with Face Line 101. Also shown is Parallax Corrected Target Line Front Point 97*. Also shown are Sweet Spot 22, Rigid Rod 88 and Level Platform 76.

FIG. 39 is a plan view of the top surface of the Golf Club Head Component 92 with Incorrect Sweet Spot Target Line 96, Target Line Closed Face 96' for a Closed Face with Face Line Closed Face 101*. Also shown is Incorrect Target Line Front Point 97 and Face Line 101. Also shown are Sweet Spot 22, Rigid Rod 88 and Level Platform 76.

FIG. 40 is a plan view of the top surface of the Golf Club Head Component 92 with Incorrect Sweet Spot Target Line 96, Parallax Corrected Sweet Spot Target Line Closed Face 96*' for a Closed Face with Face Line Closed Face 101*. Also shown is Parallax Corrected Target Line Front Point 97* and Face Line 101. Also shown are Sweet Spot 22, Rigid Rod 88 and Level Platform 76.

FIG. 41 is a plan view of the top surface of the Golf Club Head Component 92 with Incorrect Sweet Spot Target Line Open Face 96" for an Open Face with Face Line Open Face 101**. Also shown is Incorrect Target Line Front Point 97 and Face Line 101. Also shown are Sweet Spot 22, Rigid Rod 88 and Level Platform 76.

FIG. 42 is a plan view of the top surface of the Golf Club Head Component 92 with Incorrect Sweet Spot Target Line 96, Parallax Corrected Sweet Spot Target Line Open Face 96*" for an Open Face with Face Line Open Face 101**. Also shown is Parallax Corrected Target Line Front Point 97* and Face Line 101. Also shown are Sweet Spot 22, Rigid Rod 88 and Level Platform 76.

FIG. 43 is broken down into three drawings, namely 43A, 43B and 43C.

FIG. 43A is a side view that indicates the alignment of a Club Head Component 92 to

Golf Ball On The Ground 37*'. As shown Sweet Spot 22 aligns to Ball Impact Point 9.

FIG.43B is a side view that indicates, in dotted lines, the alignment of a Club Head Component 92 to Golf Ball On A Tee 37*'. As shown Sweet Spot 22 aligns to Ball Impact Point 9. Also shown is Tee 38*.

5 FIG.43C is a front view that indicates, in solid lines, the alignment of a Club Head Component 92 to Golf Ball On The Ground 37*', and indicates, in dotted lines, the alignment of Club Head Component 92 to Golf Ball On A Tee 37*'. Also shown is Tee 38*. As shown Sweet Spot 22 aligns to Ball Impact Point 9 for both the solid lines and for the dotted lines.

FIG. 44 is broken down into three drawings, namely 44A, 44B and 44C.

10 FIG.44A is a side view of Golf Club 71 that indicates the alignment of a Club Head Of Golf Club 92* to Golf Ball On The Ground 37*'. As shown is Ground Sweet Spot 10 aligned to Ball Impact Point 9. Also shown is Center Grip Shaft 42.

FIG.44B is a side view, that shows in dotted lines, Golf Club 71 that indicates the alignment of a Club Head Of Golf Club 92* to Golf Ball On Tee 37*'. As shown is Tee Sweet Spot 11 aligned to Ball Impact Point 9. Also shown is Center Grip Shaft 42. Also shown is Tee 38*.

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FIG.44C is a front view that indicates Golf Club 71 with Center Grip Shaft 42., in solid lines, indicating the alignment of a Club Head Of Golf Club 92* to Golf Ball On The Ground 37*'. Also shown is Sweet Line 4, as shown Ground Sweet Spot 10, which is on Sweet Line 4, aligns with Golf Ball On The Ground 37*' at Ball Impact Point 9. As shown the Tee Sweet Spot 11' is not aligned to Ball Impact Point 9. Also shown is Golf Club 71 with Center Grip Shaft 42., in dotted lines, indicating the alignment of Club Head Of Golf Club 92* to Golf Ball On Tee 37*'. Also shown is Sweet Line 4, as shown Tee Sweet Spot 11, which is on Sweet Line 4,

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aligns with Golf Ball On Tee 37*" at Ball Impact Point 9. Also shown is Tee 38*. As shown the Tee Sweet Spot 10' is not aligned to Ball Impact Point 9.

Note that the Club Head Of Golf Club 92* is moved forward, in the Toe direction, as the Golf Ball is raised off the Ground.

FIG. 45 is broken down into two drawings, namely 45A and 45B.

FIG. 45A shows the Sweet Spot and Sweet Line Locator Face Tapping and Balance Plane Locator Tool 105 in a vertical position, comprised of Rigid Rod 88 and Golf Ball 37*, with Flat Edge Rigid Rod Upward End 91*.

FIG. 45B shows the Sweet Spot and Sweet Line Locator Face Tapping and Balance Plane Locator Tool 105 in a vertical position, comprised of Rigid Rod 88 and Golf Ball 37*, with Concaved Rigid Rod Upward End 91**.

FIG. 46 shows an iron Club Head Component 92, with a flat Club Head Face 79 in the horizontal position, balancing at the Sweet Spot 22, on the Flat Rigid Rod Upward End 91* of Sweet Spot and Sweet Line Locator Face Tapping and Balance Plane Locator Tool 105, in coincidence with the Sweet Spot Axis 95.

FIG. 47 shows a wood Club Head Component 92, with a curved Club Head Face 79 in the horizontal position, balancing at the Sweet Spot 22, on the Concaved Rigid Rod Upward End 91** of Sweet Spot and Sweet Line Locator Face Tapping and Balance Plane Locator Tool 105, in coincidence with the Sweet Spot Axis 95.

FIG. 48 shows a Golf Club 71, with the Club Grip End 75 balancing on Rigid Rod 88, with flat Club Head Face 79 in the horizontal position, balanced on the Sweet Line 4 of Club Head Face 79, on the Flat Edge Rigid Rod Upward End 91* of Sweet Spot and Sweet Line Locator Face Tapping and Balance Plane Locator Tool 105.

FIG. 49 shows a Golf Club 71, with the Club Grip End 75 balancing on Level Platform 76, with curved Club Head Face 79 in the horizontal position, balancing on the Sweet Line 4, on the Caved Rigid Rod Upward End 91** of Sweet Spot and Sweet Line Locator Face Tapping and Balance Plane Locator Tool 105.

5 FIG. 50 shows a perspective view of Component Club Head 92, with the Curved Rigid Rod Upward End 91** of Sweet Spot and Sweet Line Locator Face Tapping and Balance Plane Locator Tool 105, square against Club Head Face 79 at the Sweet Spot 22 being at the correct designed loft and angle. Also shown is Curved Rigid Rod Upward End 91** of Sweet Spot and Sweet Line Locator Face Tapping and Balance Plane Locator Tool 105 square against Club Head
10 Face 79 at several other locations.

FIG. 51 shows front view of Golf Club 71, being suspended vertically from Suspension Point 108, in the center of Club Grip End 75, with Golf Club Axis 95'. Also shown is Clubhead of Golf Club 92*, Sweet Spot 22, Golf Club Head Upper Toe Edge Area 107*, Golf Club Head Upper Heel Edge Area 107**, Golf Club Head Lower Toe Edge Area 107***, and Golf Club
15 Head Lower Heel Edge Area 107****. Also shown is the Balance Plane 1* which has a leading edge or frontal line on the club head face called the Sweet Line 4, with the Sweet Line 4 having the limits of Maximum Sweet Spot 16 and Minimum Sweet Spot 16*.

5 Claim 5.

Golf Club with Parallax Corrected Sweet Spot Target Line markings, for use with a Golf Ball, to cause the Golf Ball to travel in the path of intended direction upon the Golf Club having impact with the Golf Ball as claimed in Claim 4 and in addition comprising the following:

d. said Parallax Corrected Sweet Spot Target Line having a length and a width, the width
10 of said Parallax Corrected Sweet Spot Target Line is able to be increased in either or both directions.